

WHAT IS CLAIMED IS:

1. A spread-spectrum signal receiver apparatus for receiving a spread-spectrum signal and demodulating transmit data from the signal, comprising:

- 5 a receive unit for receiving a spread-spectrum signal that has been spread by a spreading code comprising a combination of a first code that varies depending upon spreading factor and a second code that differs for every user;
- 10 an interference canceller for producing a replica of an interference signal from the receive signal using a despreading code comprising a combination of the first code, which is regarded as a code decided based upon a minimum spreading factor, and the second code that
- 15 differs for every user, and generating a signal obtained by subtracting the replica from the receive signal; and
- a demodulator for demodulating transmit data, from the signal from which the replica has been subtracted, by despread processing using a spreading code on the
- 20 transmit side.

2. The apparatus according to claim 1, wherein said interference canceller includes:

- a despreader for despsreading the receive signal using a despreading code comprising a combination of at
- 25 least the first code decided based upon the minimum spreading factor and the second code that differs for every user;

 a demodulator for demodulating transmit data from

the despread signal;

an attenuator for multiplying the demodulated
transmit data by a prescribed damping coefficient; and
a spreader for generating the replica by spreading
5 the attenuated transmit data using a code identical with
the despreding code.

3. The apparatus according to claim 1 or 2, wherein the
first code decided by the spreading factor is obtained
by systematically varying a code that conforms to the
10 minimum spreading factor.

4. An interference cancellation apparatus for receiving
a spread-spectrum signal that has been spread by a
spreading code comprising a combination of a first code
that varies depending upon spreading factor and a second
15 code that differs for every user, and generating a
replica of an interference signal from the receive
signal, comprising:

a receiver for receiving the spread-spectrum
signal; and

20 a replica producing unit for producing a replica
of the interference signal from the receive signal using
a despreding code comprising a combination of the first
code, which is regarded as a code decided based upon a
minimum spreading factor, and the second code that
25 differs for every user.

5. The apparatus according to claim 4, wherein said
replica producing unit includes:

a despreader for despreding the receive signal

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using the despreading code comprising a combination of the first code and the second code that differs for every user;

- a demodulator for demodulating transmit data from
- 5 the despread signal;
- an attenuator for multiplying the demodulated transmit data by a prescribed damping coefficient;
- a spreader for generating the replica by spreading the attenuated transmit data using a code identical with
- 10 the despreading code.

6. The apparatus according to claim 5, further comprising a damping-coefficient altering unit for setting the damping coefficient to zero upon detecting that data is not being transmitted.

- 15 7. The apparatus according to claim 5, further comprising a damping-coefficient altering unit for altering a damping coefficient of a data channel based upon the ratio of receive-signal power of the data channel to receive-signal power of a control channel,
- 20 wherein the data and control channels are included in the receive signal.

8. The apparatus according to claim 4, wherein said replica producing unit includes:

- a first despreader for despreading a receive signal
- 25 using the despreading code comprising the combination of the first code, which is regarded as a code decided based upon a minimum spreading factor, and the second code that differs for every user;

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a spreading-factor estimation unit for estimating the spreading factor SF on the transmit side;

a second despreader for generating a despread signal of the receive signal by integrating, m times,
5 the result of despreading, which is output from said first despreader, based upon the despreading code conforming to the minimum spreading factor, where m (an integer) represents the ratio of the estimated spreading factor to the minimum spreading factor;

10 a demodulator for demodulating the transmit data from the despread signal;

an attenuator for multiplying the demodulated transmit data by a prescribed damping coefficient; and

a spreader for generating the replica by spreading
15 the attenuated transmit data using a code identical with the despreading code.

9. The apparatus according to claim 8, wherein said spreading-factor estimation unit estimates the spreading factor based upon the ratio of receive-signal power of a
20 data channel to receive-signal power of a control channel, wherein the data and control channels are included in the receive signal.

10. The apparatus according to claim 8, further comprising a damping-coefficient altering unit for
25 setting the damping coefficient of a data channel to zero upon detecting that data is not being transmitted on the data channel.

11. The apparatus according to claim 8, further

comprising a damping-coefficient altering unit for altering a damping coefficient of a data channel based upon the ratio of receive-signal power of a data channel to receive-signal power of a control channel.

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